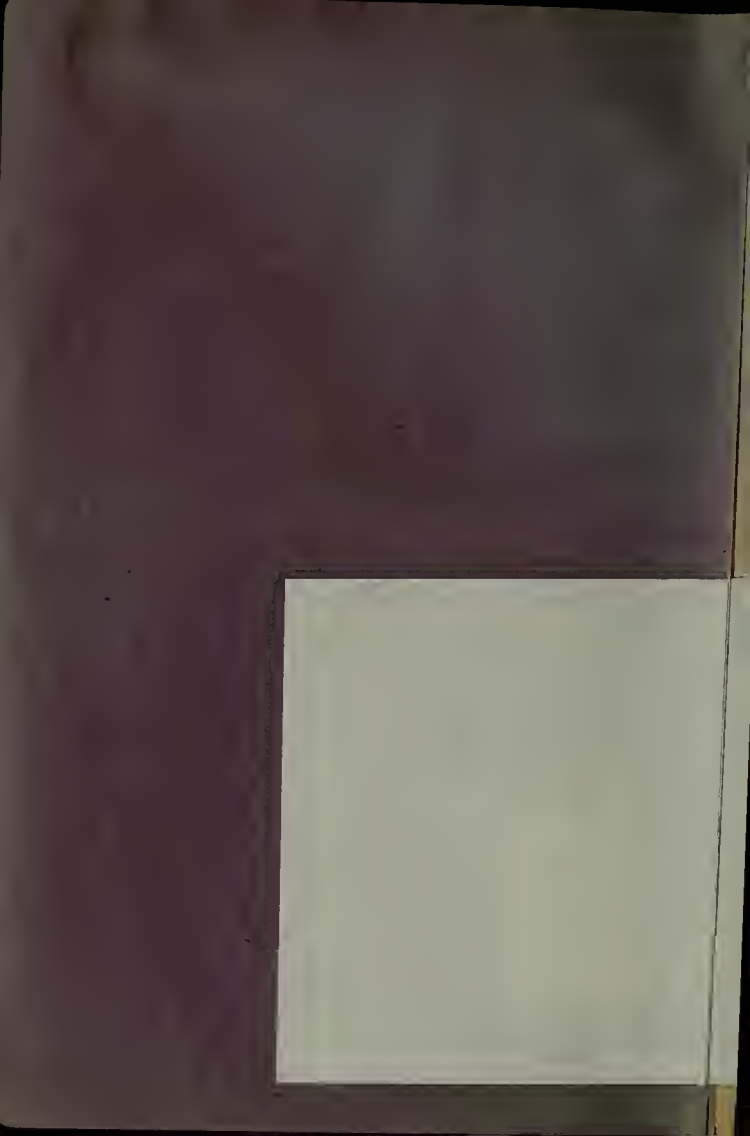
DESCRIPTIVE CATALOGUE

PRICE LIST



DESCRIPTIVE CATALOGUE

AND

PRICE-LIST

OF

RIDER

COMPRESSION ENGINES.

HUNTINGTON, HOPKINS & CO.

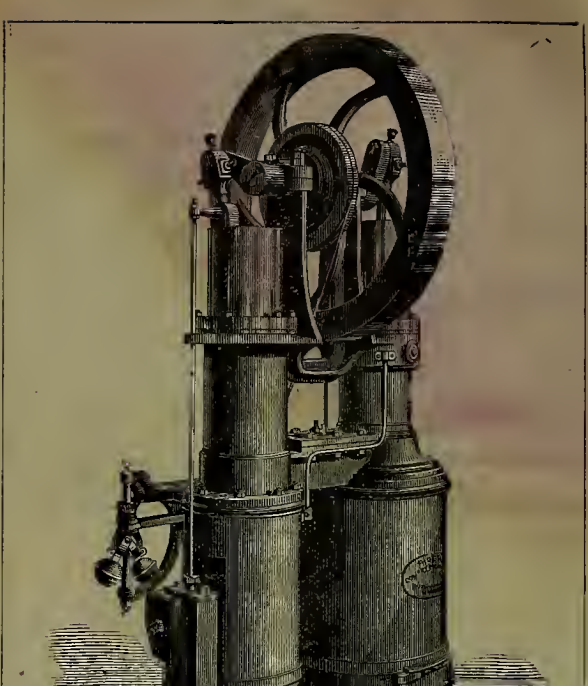
JUNCTION BUSH and MARKET STS., SAN FRANCISCO.

Sole Agents for the Pacific Coast.

SAN FRANCISCO:

C. W. GORDON, RIDER AIR-POWER PRINTER, 320 TO [illegible] SANSOME ST.

187[illegible].



Rider Compression Pumping Engine with Governor.

THE RIDER

COMPRESSION ENGINE.

The imperative demand for a motor possessing the elemente of safety, ecouomy, simplicity and durability, has called forth, during the past century, the best efforts of the most eminent engineers both of Europe and America, ae evinced by the many varieties of motors at preeent in existence, operated by gae, atmospheric air, carbonic acid, ammonia, electricity, etc.; but, till very recently, eteam has been pre-eminent in utility, notwithstanding its danger, high rate of maintenance, and total unfitnees in the hands of inexperienced persons.

A careful examination of all the motore mentioned above, ehows that atmospheric air is the only ageut at all likely to successfully compete with eteam, from its universal presence, its low capacity for heat, and its capability of producing great power when properly applied; and in this proper application consists the euperiority of the

RIDER COMPRESSION ENGINE.

As ite name impliee, the chief and distinguishing feature of this Engine ie, the uee of highly compressed cold air, the thorough heating thereof, without change of volume, and its efficient expansion to a point to or bclow the pressure of the atmosphere, thereby completely utiliziug all the force or mechauical effect possible.

All these changes are consecutively and rapidly effected in this motor, without the use of valves, springs, levers, or, in fact, any delicate parts whatever, the moving parts being reduced to the lowest possible number, viz: the pistons, shaft, and connections.

ADVANTAGES POSSESSED BY THE

RIDER COMPRESSION ENGINE

OVER ALL OTHER MOTORS.

1.—Its PERFECT SAFETY under all circumstances and conditions. Unlike a Steam Engine, no explosion is possible. Unlike a Caloric Engine, it emits no heated air or sparks of carbonized oil, as all the air is continuously retained within the Engine, and cooled down below the temperature of the surrounding atmosphere, at each revolution, thus making the Engine even SAFER THAN AN ORDINARY STOVE.

2.—Its EXTREME SIMPLICITY. It has not a VALVE, SPRING, CAM, ECCENTRIC, OR ANY LOOSE OR DELICATE PART about it to get out of order.

3.—Its GREAT ECONOMY. Twenty to thirty pounds of coal being sufficient to run a one-horse power Engine ten hours.

4.—It is PERFECTLY NOISELESS.

5.—Having no valves, there is no exhaust or escape of burned oil, or any noxious odor.

6.—It REQUIRES NO ENGINEER, and little skill to operate it, as it has no boiler and uses no steam, and only requires that the fire be occasionally replenished and bearings oiled.

7.—It DOES NOT INCREASE RISK OF FIRE OR COST OF INSURANCE.

8.—It requires less space and LESS FUEL than any other motor of equal power.

9. It can be used in many places where Steam and Caloric Engines would be inadmissible on account of danger or noise.

10.—The fire can at any time be replenished and inspected without stopping the Engine.

11.—Every part of the Engine, both internal as well as external, can be reached and examined without the least difficulty.

12.—THE COMPRESSION ENGINE PRODUCES MORE THAN DOUBLE THE AMOUNT OF POWER WITH A GIVEN WEIGHT OF FUEL THAN HAS EVER BEFORE BEEN REALIZED IN ANY OTHER SMALL MOTOR; and this can be demonstrated to the perfect satisfaction of all who may examine it.

The different sizes of our Compression Engines are adapted to the use of Printers, Lithographers, Ice Cream Manufacturers, Sausage Makers, Bakers, Founders, Machinists, Light Hardware and Jewelry Manufacturers, Locksmiths, &c., for Hoisting, Churning, Milling, Sawing Wood, Driving Farm and Wood-working Machinery, Shoe Machinery, Coffee and Spice Mills, Blowing Organs, &c.

The work, however, for which these Engines are *specially* adapted, is

PUMPING.

For this purpose we can justly say they are the most perfect engines ever constructed. Their marvelous simplicity, absolute safety, great economy, and wonderful effectiveness rendering them far superior to any other Pumping Engine in the market. Each Pumping Engine is furnished with the RIDER PATENT ROLLING-VALVE PUMP—double acting—which works at any speed without the slightest shock or noise. The Pump is placed on the side of the cooler, and works directly from the compression piston (as may be seen by reference to the cut), thus insuring perfect rectilinear motion; and all the water is passed directly from the pump through the cooler on its way to the tank or outlet, making the most complete arrangement possible.

CAPACITY.

The Six-inch, or Household size, will very easily deliver nine huudred gallons of water per hour, at an elevation of sixty or seventy feet from the surface of the well or cistern; or a proportionate quantity at a greater elevation; and will use, when running ten consecutive hours, from twenty to thirty pounds of coal only, requiring scarcely any more attention than an ordinary stove. This size is particularly adapted for supplying city and suburban residences, stores, tenement houses, hotels, boarding houses, &c., with water, as the expense of furuishing an abundant supply is thus reduced to an unprecedentedly low figure, being really only from one to two cents for a thousand gallons.

These Engines are also well adapted for nurseries, breweries, tanneries, supplying fountains, irrigating lands, pumping water for cattle, furnishing water for hydraulic elevators, &c.

The next larger size, viz , the ten-inch Engine, we can confidently recommend as

The Great Railroad Pumping Engine of the Age.

For this purpose, *i. e.*, supplying railroad water-stations, and other places where considerable water is required, it stands alone,

UNRIVALED AND PRE-EMINENT.

Sectional View. Six-inch Compression Engine.

DESCRIPTION AND OPERATION

OF THE

RIDER COMPRESSION ENGINE

As may he seen hy the sectional cut ou the seventh page, the Rider Compression Engine consists essentially of a compressiou cylinder *A*, and a power cylinder *B*, with their respective pistons *C D*, and connections, and a regenerator *H*.

The lower portion of the compression cylinder *A* is kept cold hy a current of water which circulates through the cooler *E*, which surrounds the lower portion of the cylinder, while the lower portion of the power cylinder is kept hot by the action of the fire helow the heater *F*.

The heating, and also the cooling of the air, is instantaneously effected hy its alternate presentation to the surfaces of the heater and cooler, in a thin annular sheet, such heing found hy experience to he the only correct method of rapidly and thoroughly effecting changes of temperature in air.

This is accomplished as follows :—

The compression piston *C* extends downwards to the hase of the Engine, and is a trifle smaller thau the iuterior of the cooler *E*, thus leaving a thiu space on all sides for the air to pass downward and hecome thoroughly cooled on its way to the hottom, and through which space it flows ou its way back to the heater.

The power piston *D* likewise extends downwards into the heater *F*, which in shape resemhles the bottom of a champagne bottle, that is, rising in the center, and presenting to the actiou of the fire, a narrow auuulus all around the bottom. Within this heater is the telescope *G*, which is a thin iron cylinder, about one-fourth

of an inch less in diameter than the interior of the heater. It is fitted to the interior of the power cyliuder *B*, and extends nearly to the bottom of the heater. Its office is to cause the air which flows from the compression cylinder to be preseuted in a thin sheet all around the interior surface of the heater, and particularly at the lower and hotter portion. By this means the air is thoroughly and rapidly heated.

The samc air is used continnonsly, as there is neither influx nor escape, the air being merely shifted from one cylinder to the other.

Betwcen the coupression and power cylindere ie eituated the regenerator *II*, the economical valne of which cannot be overrated. This regcnerator is composcd of a number of thin plates slightly thickenud at their edges, which, while affording a free passage to the air, subdividcs it into thin sheets. It is so placed between thc cylinders as to be travereed by the air in its passage each way between the hot and cold cylinders. Thus the heat is alternately abstracted from and returned to the air in its passage backwards and forwards through theee plates, imparting great economy and eteadiness of power to the engine.

The other portions of the engine are readily understood on inspection of the cnt. The two pistons are attached directly to to the crank *I I*, (which stand at an angle of about 95 degrees from each other, the crank of the power piston being in advance,) by simple connecting rods *J J;* and all the movements of the various parts are uniform, being eolely derived from regnlar, circular aud rectilinear motion; and ae there are no complicated parts, and none of the irregular intermittent impulses which characterize Caloric Engines, a high rate of speed and smooth action may be safely and easily obtained.

K K are the packings which are in dnplicate for each cylinder. The lower one has its lap downwards to reeist the escape of air below the pieton, while the upper one has its lap upwards to prevent the lubricating material from entering too freely into the cylinders.

Between them is the Relief Ring, whioh is so constructed as to almost entirely relieve the friction of the packings.

L is a simple check valve which supplies any slight leakage of air which may occur. It is generally placed at the back of the engine, at the lower part of the compression cylinder, but is necessarily shown in the sectional cut on the side.

OPERATION:

The operation of the engine is briefly as follows:—

The compression piston *C* first compresses the cold air in the lower part of the compression cylinder *A* into about one-third its normal volume, when, by the advancing, or upward motion of the power piston *D*, and the completion of the down-stroke of the compression piston *C*, the air is transferred, from the compression cylinder *A*, through the regenerator *H*, and into the heater *F*, without appreciable change of volume. The result is a great increase of pressure, corresponding to the increase of temperature, and this impels the power piston up to the end of its stroke. The pressure still remaining in the power cylinder and re-acting on the compression piston *C*, forces the latter upward till it reaches nearly to the top of its stroke, when, by the cooling of the charge of air, the pressure falls to its minimum, the power piston descends, and the compression again begins. In the meantime the heated air, in passing through the regenerator has left the greater portion of its heat in the regenerator plates, to be picked up and utilized on the return of the air towards the heater.

HEATER. The heater is made by a peculiar process of our own, whereby the metal is rendered very dense, and refractory to the action of heat, thus greatly increasing its durability.

PACKINGS. The packings are simple discs of leather, and will last a very long time without renewal: those on the hot cylinder are kept cool by a small stream of water, which circulates round the upper portion of the cylinder, so that there is no danger of overheating them.

CONNECTING RODS. The Connecting rods are of the best known

construction. Their ends are made of gun metal, connected together by a tube, in which is fitted a rod, extending from the upper to the lower brass, and so arranged that one key, capable of nice adjustment by nuts, at once takes up the lost motion on both upper and lower brasses. This tube also permits the oil to flow down to the lower brass, and thus *both ends* are lubricated from the oil cup at the same time. It will be seen that this construction is at once efficient and durable; no loose straps, gibs or other pieces are used, and there is no chance of consequent breakage.

WATER. As before stated, in the Pumping Engines the whole of the water pumped is passed directly from the pump through the cooler, thus effectually and instantaneously cooling the heated air, which passes down the interior of the cooler on its way to the bottom. A very small pump is also furnished with the Power Engines, which is attached like the large pump of the Pumping Engine, to the side of the cooler, and a small stream of water is injected with each stroke of the piston. This may be returned, if desired, to the barrel or reservoir from whence it is taken, until the water becomes in time too warm for effective use; or, it may be allowed to run to waste, which is preferable where water is not too scarce, as the cooler the compression cylinder is kept, the better. Where a pressure of water can be obtained, the small pump may be disconnected if desirable, and a very small stream allowed to flow into the cooler, and pass out at the opposite side.

No pains are spared to make these Engines perfect in every respect. The materials and workmanship are of the best quality, and we are confident that the public will find them unequaled for compactness, design, efficiency, and general usefulness.

PRICE LIST, DIMENSIONS, WEIGHT, &c.

PUMPING ENGINES.

Horse Power	Size of Cylinder Inches.	Height to top of Fly wheel. Ft.	In.	Floor Space. ft. in.	ft. in.	Weight lbs.	Revolutions per Minute.	Price.
1	6	5	8	2 4x3	3	1,200	120	$350 with gov'nr
1	6	5	8	2 4x3	3	1,200	120	350 with pump.

POWER ENGINES.

Horse Power	Size of Cylinder Inches.	Height to top of Fly Wheel. Ft.	In.	Floor Space. ft. in.	ft. in.	Weight lbs.	Revolutions per Minute.	Price.
2	10	7	6	2 8x4	4	2,600	100	$600 with gov'nr
2	10	7	6	2 8x4	4	2,700	100	650 with pump.

We insert a few letters from gentlemen, who have the Rider Compression Engines, to show the appreciation in which they are held :—

San Jose, June 24th, 1876.

Messrs. Huntington, Hopkins & Co.,

Gentlemen: I take pleasure in saying that the Rider Compression Engine and Pump which I bought of you has given entire satisfaction, doing all you claimed it would. *I consider it a grand success.*

Yours truly,
T. ELLARD BEANS,
President Bank of San Jose.

San Francisco, July 7th, 1876.

Messrs. Huntington, Hopkins & Co.,

Gentlemen: The ten-inch Rider Engine and Pump purchased of you has now been in use two months, doing all you claimed for it, and *giving entire satisfaction*—pumping 4000 gallons of water per hour, and consuming one-fourth the amount of coal nsed by the steam pump doing same amount of work.

Yours truly,
L. M. CLEMENT,
Chief Asst. Eng. and Supt. Track, C. P. R. R. Co.

SAN JOSE, July 8th, 1876.

MESSRS. HUNTINGTON, HOPKINS & CO.,

Gentlemen: The six-inch Rider Compression Engine and Pump which I have had in use about two months, is all, in fact more than you represented it to be, and gives *entire* satisfaction, requiring little attention and a very small amount of coal for the work performed. Pumping 5000 gallons at an expense of about ten cents.

Yours truly,

W. D. TISDALE.

SAN FRANCISCO, July 31st, 1876.

MESSRS. HUNTINGTON, HOPKINS & CO.,

Gentlemen: The Rider Compression Engine which you furnished me has now been in operation nearly two months, and is working well. It runs one Taylor Cylinder and four Gordon Presses easily, with power yet to spare.

For purposes requiring from one to three-horse power, I believe the Rider Compression Engine *is without an equal*, as it is simple in construction and does not require the services of an engineer; no extra rate of insurance is exacted; and it requires but little more fuel to generate the necessary power than I use in my stove during the winter season. For my purposes, it cannot be equaled by anything within my knowledge.

Very Respectfully,

C. W. GORDON,

326 Sansome St., San Francisco.

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559 LEXINGTON AVE., N. Y., May 5th, 1876.

The Rider Pumper (Household size) you set up in my apartment houses, "The Lexington," on 49th street, last year, has proved itself in all respects better than you claimed. You guaranteed it to me to pump 800 gallons water an hour, but on a test it pumped 1260 gallons. It has never had one cent for repairs put on it, and is in as good order as when new. To pump for the five houses it has to work a half hour morning and night. For pumping I think it has no superior, and shall probably put one in my houses in 50th street.

Yours,

J. C. DONNELLY.

NEW YORK, December 6th, 1875.

Enclosed please fiud check in payment for the Household Pumping Engine purchased of you some two months since. I am *perfectly satisfied* with it in every respect, and can pump from the cellar of my French flat houses to the roof (five floors), eight hundred gallons of water per hour, at a merely nominal cost of running. The Engine can be seen any day in my houses, corner of 91st street and 3d Avenue.

Yours, &c.,

ROBERT G. GREGG, No. 1 Bowery.

MANHATTAN COLLEGE,
NEW YORK CITY, March 17th, 1876.

The Rider gives entire satisfaction; we did not anticipate it would work so well or prove so useful; you may send parties desiring to purchase to the Institute, to see how it works.

Yours Truly,

BRO. PAULIAN.

OFFICE OF PALMER, EMBURY & Co.,
46 Elizabeth Street,
NEW YORK, Dec. 15th, 1875.

The six-inch Compression Pumping Engine which you sent me for my house in Orange, N. J., is all that you represented it to be. The cost of running it is comparatively nothing—about two quarts of coal (nut size) will fill my tank, which holds about one thousand gallons, drawing the water from either well or cistern, and elevating it to the tank, 30 feet. The steam engine which I first had for the same purpose cost so much for fuel and to keep in order, that I could not afford to run it. It was a constant source of fear that it might blow up; consequently I did not dare to leave it while steam was at a pressure in the boiler.

Your engine pumps the tank full while I am eating my supper, and requires no more attention after it is properly oiled and started than the kitchen fire.

My servant (cook), makes the fire in the engine before I return home from business, so that all I have to do is to oil and start it. She can run it as well as I can, but I generally do it for my own amnsement. My architect, Mr. J. Frank Lyman, of Orauge, N. J., says you may refer to him.

Yours Respectfully,

PETER A. EMBURY.

NEW YORK, December 2d, 1875.

Enclosed please find check in payment for the one-horse Compression Engine bought of you last month.

I am well satisfied with it, and find it does my work perfectly. I run a 24-inch grindstone and 10-inch emery wheel, to do light grinding in my hardware store. I would recommend it to any desiring a motor of small power as being *just the thing*. My son, aged 13, is the only engineer it requires, and it causes me no anxiety.

Yours truly,

M. SCHONBORN, 510 Greenwich St.

NEW YORK, February 10th, 1876.

The Honsehold Rider Engine I bought of you several months since, has proved itself fully as good as you guaranteed it, as regards economy, simplicity and power. It runs two barrels of gum and alcohol, and one small mill for grinding gum. It does this with perfect ease, thus doing away with the expense and annoyance of having boys to do the work now done by the engine, requiring little or no attention, only enough to keep up a small fire; for parties desiring small power, I should recommend the Household Engine as being the best small motor I ever saw, and as being the *extreme of simplicity*.

Yours, &c.,

C. P. WILLIAMS, 48 Crosby Street.

The Rider Compression Engine is destined to create a revolution in machinery. It is a wonderful machine, and we believe it will be one of the grand successes of the age.—*Nautical Gazette.*

This Engine is the invention of one of our most skillful American Engineers.—*American Artisan.*

These motors possess very great advantages.—*Iron Age.*

Their simplicity of construction, ease of management, safety and silence, will make them of value to persons wishing a moderate amount of power.—*Scribner's Monthly.*

Unquestionably the best thing of the kind in the market, and answers its purpose admirably.—*N. Y. Era.*

John Blake
Peters Stachen